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EXAMINER	
KALINOWSKI, ALEXANDER G	
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Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Requirement for Information Under 37 C.F.R. § 1.105

1. Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

2. The information is required to identify publications embodying the disclosed subject matter of a method for manufacturing a chart reflecting the value of an intangible asset of interest. The Examiner upon conducting a search for prior art, discovered two published document titled "Evaluating Intellectual Capital - Part I" and "Evaluating Intellectual Capital - Part IV. Tracking Investments (copy of each enclosed). Both documents reference a methodology called ProGrid. The papers indicate that the ProGrid methodology was developed in 1993 and that the ProGrid methodology was presented at a lecture at the 1993 Canadian Chemical Engineering Conference. In response to this requirement, please provide documentation indicating what was disclosed regarding the ProGrid methodology at the 1993 Canadian Chemical Engineering Conference. Moreover, please provide any known publications or brochures regarding the ProGrid

methodology. In addition, please provide any known publications, brochures and press releases that describe ProGrid products.

3. The fee and certification requirements of 37 C.F.R. § 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 C.F.R. § 1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this requirement under 37 C.F.R. § 1.105 are subject to the fee and certification requirements of 37 C.F.R. § 1.97.

4. In responding to those requirements that require copies of documents, where the document is a bound text or a single article over 50 pages, the requirement may be met by providing copies of those pages that provide the particular subject matter indicated in the requirement, or where such subject matter is not indicated, the subject matter found in applicant's disclosure.

5. The applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR 1.56. Where the applicant does not have or cannot readily obtain an

item of required information, a statement that the item is unknown or cannot be readily obtained will be accepted as a complete response to the requirement for that item.

6. This requirement is subject to the provisions of 37 C.F.R. §§ 1.134, 1.135 and 1.136 and has a shortened statutory period of 2 months. EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136(a).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Kalinowski, whose telephone number is (703) 305-2398. The examiner can normally be reached on Monday to Thursday from 8:30 AM to 6:00 PM. In addition, the examiner can be reached on alternate Fridays.

If any attempt to reached the examiner by telephone is unsuccessful, the examiner's supervisor, Tariq Hafiz, can be reached on (703) 305-9643. The fax telephone number for this group is (703) 305-0040.

Alexander Kalinowski

12/14/2001

SAM RIMELL
PRIMARY EXAMINER
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2/PD/2 (Item 2 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

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Abstract

This is the fourth and final article in the series evaluating Intellectual Capital (IC). The first three articles examined the components of IC, the management of IC within research organizations, and the evaluation of IC investment opportunities. This fourth article describes a methodology for tracking the technical and market readiness of new IC.

As noted in the first article in this series, the value of intellectual capital, unlike tangible assets, is subjective and based on the ability of the owner or user to extract commercial value. The challenge for technology-intensive companies is to maintain their pool of intellectual capital through the development of new processes, products and services. A methodology called **ProGrid**-TA (R) has been developed to assist research organizations and their sponsors to track their investments in new technology, from inception to commercialization.

1. Evaluating Technologies

The **ProGrid**-TA methodology was developed in 1993 to assess the technical and market readiness of new technologies. It has now been used to assess approximately 300 new processes, products and services and has been upgraded progressively based on the experience of a wide range of users. As with all **ProGrid** tools, the methodology involves a sequence of steps; establishing criteria for measuring progress, constructing a grid with two of the criteria as key indicators of performance, and grouping the balance of the criteria into a matrix, each cell of which represent a factor which if achieved contributes to either of the two over-arching criteria.

The matrix used in the **ProGrid**-TA assessment is shown in Figure 1. The columns in this matrix represent a progression from factors that largely influence the technical strength of the project in Column A, to those that largely influence its commercial strength in Column C and those that are necessary factors to connect the technology to the market place in Column B. The headings for Column A and C (Technical Strength and Commercial Potential) are the two over-arching criteria and are used as the axes of the positioning grid, shown in Figure 2.

2. Establishing the Metrics

Performance levels must be established for the criteria embedded in the above matrix to provide the metrics for the **ProGrid**-TA calculations. This is facilitated through the development of Language Ladder statements for thirty-seven criteria. For example, one of the criteria in the Technical Framework cell is Advance on Prior Art. The following statements cover the expected range of performance:

A. a relatively small advance on the prior art that would not be apparent to most users;

B. a definable and measurable extension of the prior art that will be discerned by discriminating users;

C. a significant and readily recognizable improvement over the prior art, but the basic scientific and technical principles are similar; and

D. a major advance on the prior art and embodies significantly different principles.

An example of a market-oriented criterion is Market Acceptance, for which the expected range of performance is covered by the following statements:

A. There is no evidence at this time of customer acceptance.

B. Preliminary market studies indicate positive customer acceptance.

C. Specific customers have been identified who have indicated their intention to place orders.

D. Current or new customers have given firm orders today.

Values are assigned to each performance level to provide the core metrics for the **ProGrid**-TA calculations.

3. Positioning Grid

Once a technical asset has been evaluated using the **ProGrid**-TA methodology, its position can be represented on the positioning grid shown in Figure 2, depending on its state of technical strength and commercial potential. The data in this chart represent technology/market pairs that were evaluated to the end of 1997.

At the inception of a new idea, its location on this grid will likely be close to the origin. As the idea matures into a bona fide technology, it will follow a specific trajectory. If the technical and market developments proceed in parallel, the trajectory will follow the 45 degree diagonal. If the market develops faster than the technology, or if the technical content is relatively low, the trajectory will lie closer to the x-axis. Conversely, if technical progress proceeds faster than market development, or if the technical content is very high, the trajectory will lie closer to the y-axis. Where the trajectory ends will determine the overall merits of the technology.

The division of the upper right quadrant into four zones illustrates the characteristics of technologies that fall within those zones. Niche products are those that have high technical strengths but with limited market reach; specialized analytical equipment would normally be in this zone. Market Satisfiers are products that have limited technical content but have large and sustainable markets. Market Leaders are those that have both high technical content and large market reach and these are the targets for most Venture Capital pools. The stalled zone represents an important area of the grid: technologies may pass through this zone on transition to a higher performance state. However, if they fail to make the transition after an appropriate period of development time, it may be an indication that the technology lacks the singular strengths to move beyond a "stalled" situation. There may be considerable further development effort but with limited true progress.

4. Technology Profile

A second and important output of the **ProGrid** methodology is the Technology Profile bar chart with the bars representing the strength of each cell of the matrix previously described. Profiles for two technologies are shown in Figure 3, one having strength on the left side of the chart (technical factors) and the other having strength on the right side (commercial factors). These are frequently referred to as Technology Push and Market-Pull technologies. The previously mentioned Stalled technology will have no commanding strengths and no major weaknesses, i.e., a flat profile. This is typical of a mature technology that has been involved in several commercial launch attempts where the obvious weaknesses have been corrected but no outstanding strengths have emerged.

5. Advanced Features

Future Position -- An expert system has been added to the **ProGrid** methodology that provides an estimate of the future position as development proceeds. Each of the 37 criteria has four levels of performance, resulting in a total number of 148 current performance states. The likelihood of advancing from these states has been estimated based on each language ladder statement. This feature allows progress to be measured against the attainable future state. An example of the potential trajectory of a technology calculated by the expert system is shown in Figure 4.

Commercialization--Additional modules (**ProGrid** CS, **ProGrid** CO; see Part 1 of this series, p. 24, January 2001, ACCN) can be added to **ProGrid**-TA to assess the capability of the company who

will commercialize the technology. Venture Capital companies have historically placed pre-eminent importance on the quality of the management team in start-up companies. They have learned to make accurate judgements about the capability of the commercializing team based on a few observations essentially a "gut feel" about the quality and commitment of the principals. The **ProGrid**-TA approach uses a different sequence; if the technical assets are strong and a viable market exists, then the venture deserves closer examination regardless of the current strengths and weaknesses of the commercializing organization. This approach provides the opportunity to add value by facilitating the addition of the missing components. If the **ProGrid**-TA assessment is encouraging, the companion modules can be employed to determine the strengths and weaknesses of the company.

6. The Assessment Process

The **ProGrid**-TA technology assessment procedure should be carried out by a panel of people knowledgeable about the technology/market to be assessed. This normally will include individuals representing the technology developers, the commercialization team, and preferably one or two individuals who are not part of these two groups but whose participation will add credibility to the process. A trained facilitator adds considerable value to the assessment by ensuring that the assessment decisions are consistent and well supported. The facilitator ensures that consensus is reached on each of the 37 **ProGrid**-TA criteria. In addition to assessing the technical and market readiness of a new technology, the **ProGrid**-TA assessment also serve as a mentoring session to help the entrepreneur define the actions needed to enhance the probability of commercial success.

Acknowledgements

The author has worked with many experienced technology managers in developing best practices of research management and the various **ProGrid** tools, which have been described in the four articles in this series. Three individuals in particular played a very large role, J.R. (Ron) McCullough, G.B. (Gerry) Dyer, and J.W. (John) Kramers.

Clem Bowman, FCIC, has had an extensive R&D management career with Imperial Oil and the Alberta Research Council. Nine years with the Alberta Oil Sands Technology and Research Authority provided experience in funding technology-intensive ventures, which led to his interest in providing tools for R&D funders and venture capitalists.

The evaluation matrix.

A	B	C
Technical Strength	Connecting Factors	Commercial Potential
Technical Framework	Commercial Readiness	Market Characteristics
Level of Verification	Proprietary Strength	Margin and Profit Potential
Excellence of Project Team	Technological Durability	Commercialization Channels

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C.W. (Clem) Bowman, FCIC
Abstract

Intangible assets in general, and intellectual capital specifically, are now recognized to be at least as important as tangible assets for most organizations. Intellectual capital is not simply the difference between book value and market value. The absence of reliable measurement processes has made the management of intangibles a very difficult task. Many approaches have been proposed but they have failed to bridge the gap between knowledge of the asset and the metrics needed to facilitate market place transactions.

The generation and use of intellectual capital is the lifeblood of research organizations. The development of consistent processes for selecting projects, adopting best practices and evaluating and transferring developed technologies has been the focus of attention for R&D managers for many decades. This is the first in a series of articles describing a unique made-in-Canada methodology for carrying out these functions, called **ProGrid**(R). It is being used by many Canadian R&D entities, including the Ontario Centres of Excellence, the Canada Foundation for Innovation and a number of R&D agencies in Alberta and Ontario. The initial stage of development of the **ProGrid** approach was described at the R.S. Jane lecture at the 1993 Canadian Chemical Engineering Conference, with an update at the 1999 Conference.

1. Importance of Intangible Assets

In the past, tangible assets were assumed to represent the majority of the wealth of companies. These were readily amenable to accurate assessment, "bean counting" to use a somewhat derogatory expression. The accountants' view of the world has been an important feature of national and international commerce. Their metrics have provided the framework for transactions among commercial enterprises.

It has been realized in the last few decades that tangible assets were only one part of the wealth of a company or a nation. The book value of a company frequently has badly represented its strength, either by overlooking future potential or in some cases by assuming unrealistic longevity of its current manufacturing processes and products. Of the Fortune 500 companies in the first listing in 1954, 360 would not appear in a similar listing of industrial companies today.' Would better knowledge of the strength of their intangible assets, such as intellectual capital, have predicted their demise?

There is an important distinction between tangible assets and intellectual capital. Tangible assets have an intrinsic value independent of the observer. The value of intellectual capital, however, depends in large measure on the values, priorities and expectations of the observer. There is another distinction -- a dimensional issue, one of time. Many tangible assets devalue overtime. Intellectual assets often realize their value only over time.

2. Measurement Approaches

The challenge to measure intellectual assets is formidable. Various tools have been developed which have been useful for specific applications. These include:

The Risk Management Matrix of the Boston Consulting Group

This is a technique that uses four-quadrant grids for displaying performance, for example, with Relative Market Share and Growth as the two axes. As noted in the review by Millet and (Honton.sup.2), these terms represent cash generation and cash use, respectively. Thus, these two axes are not independent variables. Further, Millet and Honton note that the portfolio analyses methods, of which the Boston Consulting Group Risk Management Matrix is an example, are "not only highly judgmental, but also highly arbitrary".

The Kepner-Tregoe Decision Process (3)

This technique lays out key criteria for a selection process and uses a numerical scale to rank alternative choices. This methodology is particularly useful in problem-solving by identifying the likely cause of an undesirable event by listing and weighting potential causes. This approach illustrates the importance of having clearly defined criteria and separating them into "musts" (overarching criteria) and "wants" (desired goals that cumulatively contribute to the final decision).

The Blake Managerial Grid (4)

The Blake grid is used to optimize the balance between people-focused and production-focused human resource practices. This technique uses a grid that displays and compares different personnel behaviour practices. Although not quantitative, it shows how subjective factors can be organized into meaningful patterns.

The Myers-Briggs Personality Test (5)

This evaluation test ascertains the personality traits of individuals by the selection of preferred statements to define personality traits. It is useful in improving group dynamics by valuing different approaches to solving problems.

These methods have been useful in identifying and describing the characteristics of various components of intellectual capital, and in some cases included numerical ranking scales. However, the metrics needed to move back and forth across a transaction interface were not established. It seems that the developers of these methods stopped short of the goal - tantalizingly close, but the bridge was not made.

3. The Missing Bridge

Commercial transactions involving tangible assets are facilitated by the ability of the transferor and transferee to agree on the value of the asset, using well accepted accounting principles. However, for intangible assets the difficulty in determining the value impedes the transaction. It has been difficult to define the total value of a group of intangibles or to compare several different groupings of intangibles. In order to accomplish this, metrics must be established and agreed upon.

Consider the case of a technology that is to be transferred from an inventor to a venture capitalist. The value of the technology can be represented by a number of factors, such as the strength of the patents, the level of validation and the expected market demand. The challenge is to determine how these factors influence the value of the technology and how this compares to other technologies being considered by the venture capitalist.

The key to developing the metrics is through the establishment and calibration of a precise language to express the value of the asset under consideration (the Language Ladder in **ProGrid** terms).

4. Components of Intellectual Capital

The components of intellectual capital that are highly relevant to a research organization are shown in Figure 1. There are many excellent references that help in understanding this complex subject, including the book by Tom Stewart.

Intellectual property is comprised of legally recognized knowledge, such as patents, trademarks, copyrights, trade secrets, etc. Codified knowledge is knowledge that exists in a form that enables it to be shared with others, in the form of documents, drawings, software, etc. Intellectual assets are the sum of intellectual property and codified

knowledge. Structural capital is understood to comprise intellectual assets, plus the organization's systems, processes, key relationships (such as those with customers, business partners and suppliers), and innovative capacity. The components of structural capital are sometimes referred to as customer capital, organizational capital, process capital, innovation capital, etc. The sum of structural capital, and the knowledge, skills, capabilities, and motivation of its people (often referred to as human capital) constitutes an organization's intellectual capital.

Is it possible to measure the value of each of these components of intellectual capital? Most organizations, in fact, still operate at the level of intellectual property. There are, however, a group of industry and government leaders who are active in developing both the definitions of the other elements of intellectual capital and the frameworks within which these can be measured and tracked over time.

5. Managing Intellectual Capital in R&D Organizations

As illustrated in Figure 2, R&D activities can be divided into the following three broad functions:

* selecting programs and projects;
* performing at pacesetter best practices; and
* evaluating and transferring knowledge and developed technologies.

Key success factors of R&D organizations bridge across this continuum, first doing the right things, then doing things right and finally getting the results to users. A key part of R&D management is to learn through this process and constantly strive to improve and profit from both successes and mistakes.

ProGrid is a non-linear two-dimensional process for tracking progress across the above R&D continuum. It assigns values to the components of intellectual capital that are selected by the evaluator, and aggregates these into usable "bites" that are plotted on a grid with axes representing two overarching criteria, again chosen by the evaluator. The **ProGrid** process allows the R&D organization to rank projects and select those that best fit its mission and mandate. The same process keeps track of progress through defined gates and facilitates technology transfer to the ultimate user. How the **ProGrid** methodology is used will be illustrated in three examples, described in the subsequent articles in this series.

Is there something fundamental about two dimensions? In many activities in life we are faced with decisions with two choices. In many cases they represent short-and long-term options, immediate gratification of needs or longer-term investment to meet future needs. Companies that fail due to the obsolescence of a dominant product have failed to provide for product replacement. They had been one-dimensional in their thinking. Thus, one of the axes in most of the **ProGrid** tools has a time dimension, in effect separating the current situation from an expected future state.

6. The **ProGrid** Family

Over the past eight years, a number of **ProGrid** tools have been developed for specific tasks. From left to right in Figure 3 there is a shift from a technology focus to a more market or organizational focus. Proceeding down the Figure there is a shift from screening tools to more definitive and detailed evaluation tools.

Some of these are set piece tools (e.g. **ProGrid**-RO and **ProGrid**-TA) and are used for benchmarking and auditing purposes. These have been employed in more than five countries and a sizable database has been established. Other **ProGrid** tools have been customized for specific purposes, particularly those in the **ProGrid**-Quick category, and are used primarily for selecting proposals or alternative courses of action.

ProGrid-IC represents a collection of processes and tools for managing intellectual capital within an organization by establishing the current and desired future positions and tracking performance trajectories. These are customized for the needs of individual organizations.

In the second article in this series, results will be presented of an international study that used the **ProGrid**-RO tool for assessing the internal practices of R&D organizations with respect to the vision and mission of the 'owners'. These are the processes inside the box in Figure

2.

The third article will describe examples of **ProGrid** tools used by many Canadian [redacted] entities for selecting proposals, projects and programs, (the input to the box in Figure 2). The fourth article will present the tool for assessing the technical and market readiness of developed technologies (the output from the box in Figure 2).

References

(1.) Loomis, Carol J., Kathleen C. Smyth, Suzanne Barlyn, 'Forty Years of the 500', Fortune 40th Anniversary Issue, 131:9, p. 182.

(2.) Millet, Stephen M. and Edward J. Honton, A Manager's Guide to Technology Forecasting and Strategic Analysis Methods, Battelle Press, 1991.

(3.) Kepner, Charles and Benjamin Tregoe, The New Rational Manager, Princeton Research Press, Library of Congress Number 80-84367, 1981.

(4.) 'The Managerial Grid', Robert R. Blake and Jane Mouton, Gulf Publishing Company, Library of Congress Number 64-14724, 1964.

(5.) http://www.oise.on.cal(sim)cengel/coop.mbcareer.htm

(Table omitted)

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